REMARKS / ARGUMENTS

The above identified patent application has been amended and reconsideration and reexamination are hereby requested.

Claims 1 and 3 – 8 are now in the application. Claim 2, 13 and 20 have been previously cancelled. Claims 9 – 12, 14 – 19 and 21 have been previously withdrawn. Claims 1 and 6 have been amended.

The Examiner has rejected Claims 1 and 3 – 8 and 22 – 23 under 35 U.S.C. §103(a) as being unpatentable over Tarui et al. in view of del Puerto et al.

The Applicant's Claims 1 and 6 now call for (underlining added for emphasis) ... wherein the same single heat exchanger both pre-cools and conducts the fluid to the wafer/hybrid chuck and receives back the fluid from the wafer/hybrid chuck to contribute to the pre-cooling of the fluid.

As such, the Applicant submits that Claims 1 and 6 are not unpatentable over Tarui et al. in view of del Pueroto et al. under 35 U.S.C. §103(a).

The Examiner has maintained that Tarui et al. discloses the previously claimed invention except for the claimed fluid being conducted through a chuck and has introduced del Puerto et al. to provide that feature.

However, the Applicant submits that the introduction of del Puerto et al. to provide for fluid being conducted through a chuck does not overcome the deficiencies of the Tarui et al. teachings.

According to the amended independent Claims 1 and 6, the dry fluid after having been pre-cooled in the single heat exchanger is conducted succesively first through the first line, then through the wafer/hybrid chuck, then through the second line back to the same single heat exchanger. Because the first line leads out of the single heat exchanger into the wafer/hybrid chuck and the second line leads out of the wafer/hybrid chuck back to the single heat exchanger, which is located outside the space, the fluid portion remains separate from the space during these steps. In this way, the fluid portion is enabled to cool the wafer/hybrid chuck including the wafer, which by being applied to the chuck is in thermal contact with it, substantially without undesirably lowering the temperature of the atmosphere in the space. Thereby the fluid portion retains a residual coldness, which then

is used to cool the single heat exchanger to contribute to the single heat exchanger's task of pre-cooling freshly supplied fluid. It is only after having contributed in this way and thereby given up its residual coldness that the portion is allowed to flow out within the space. In this way, the dry, pre-cooled fluid used for cooling the wafer is re-used in a two-fold-way.

(1) its coldness is utilized in the heat exchanger for the pre-cooling of freshly supplied fluid.

(2) its dryness is utilized for conditioning the atmosphere within the space at a desired temperature that is higher than the temperature of the wafer.

As such, the two separate tasks of providing a cool wafer and a warmer, dry atmosphere surrounding it, can be performed with only a small amount of energy. The Applicant submits that Tarui et al. fails to disclose or render obvious such a single heat exchanger arrangement, even in view of del Puerto et al.'s teachings as to fluid being conducted through a chuck.

Tarui et al. discloses a method for drying semiconductor wafers in which wafers are arranged vertically on horizontal boat 82 in a vessel 11. By heating liquid IPA at the bottom of the vessel using a first heat exchanger tube 17, dry IPA vapor is generated such that it flows out within the vessel and among the wafers. Second heat then is passed through a drain pipe 22 over the inner wall of the vessel to its bottom (column 4, line 25-31) where again it is heated by the first heat exchanger tube 17. The wafer boat and wafers, being positioned away from the inner walls of the vessel, thus are never reached by the IPA cooled by the second heat exchanger tube 21 but are maintained at the temperature of the IPA vapor generated by the first heat exchanger tube 17. As noted in Tarui et al. at column 4, lines 24 to 27, (underlining added for emphasis): "The second heat exchanger tube 21 has a function for cooling and condensing IPA vapor which flows into the gutter 22 through an inner opening 22a."

Also, Taraui et al.'s coolant source 28, as such is deemed by the Examiner to correspond to the single heat exchanger in accordance with the present invention and has lines 21, 22 connected thereto, is not the same as the heating source 20 which connects to

lines 17a, 17b and provides saturated/supersaturated steam as a heat source to provide the IPA vapor.

Further, since Tarui et al. is concerned solely with drying wafers, it does not provide any motivation for conditioning a wafer at a temperature lower than the surrounding atmosphere, since it teaches (see column 4, line 66 to column *5,* line 4) to increase the temperature of the wafers beyond that of their surroundings by irradiating them with infrared rays.

The Applicant therefore submits that there is no hint or suggestion in Tarui et al. as to a same single heat exchanger that both pre-cools and conducts the fluid to the wafer/hybrid chuck and that receives back the fluid from the wafer/hybrid chuck to contribute to the pre-cooling of the fluid. Claims 1 and 6 are therefore deemed patentable over Tarui et al. even in view of del Puerto et al.

Claims 3, 4, 5, 8 and 22 are dependent on Claim 1. Claims 7 and 23 are dependent on Claim 6. As such, these claims are believed allowable based upon Claims 1 and 6.

A telephone Interview was held by Examiner Gravini and Attorney Paciulan on August 12, 2010. The interview focused on the details of the operation of the present invention as shown in FIG. 3, the operation of Tarui et al. as shown in its FIGs. 1 and 2, the specific claim limitations of independent Claims 1 and 6, and how they are distinguished from Tarui et al. Attorney Paciulan emphasized that there is only a single heat exchanger that both (1) pre-cools and conducts the fluid to the wafer/hybrid chuck and (2) receives back the fluid from the wafer/hybrid chuck to contribute to the pre-cooling of the fluid in the same heat exchanger. It was emphasized that Tarui et al., on the other hand, has one heat exchanger to deal with evaporating the IPA and another separate heat exchanger to condense the evaporated IPA into the gutter. The Examiner indicated that allowability was likely if a Request for Continued Examination (RCE) was filed wherein Claims 1 and 6 were further amended to clearly indicate that the claimed heat exchanger was only a single heat exchanger that both (1) pre-cools and conducts the fluid to the wafer/hybrid chuck and (2) receives back the fluid from the wafer/hybrid chuck to contribute to the pre-cooling of the fluid in the same heat exchanger.

Therefore, in view of the above amendments and remarks it is submitted that the claims are patentably distinct over the prior art and that all the rejections to the claims have been overcome. As such, allowance of the above Application is requested.

Respectfully submitted,

F. CHAU & ASSOCIATES, LLC

Date: SEPTEMBER 10, 2010

By _____

Richard J. Paciulan
Reg. No. 28,248

Mailing Address:
F. CHAU & ASSOCIATES, LLC
130 Woodbury Road
Woodbury, New York 11797
TEL: (516) 692-8888
FAX: (516) 692-8889